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Down-regulated IL-5 receptor expression on peripheral blood eosinophils from budesonide-treated children with asthma.

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BACKGROUND: The expression and function of cytokine receptors on peripheral blood eosinophils (PBE) from healthy and asthmatic children are poorly characterized. METHODS: The PBE count and expression of IL-5 receptor (R) and GM-CSFR positive PBE was analyzed in nonsteroid-treated asthmatic children (n = 13), budesonide-treated asthmatic children (n = 24) and healthy children (n = 16) by flow cytometry. Alterations in intracellular EG2-epitope expression were used to measure the in vitro responsiveness of PBE to recombinant IL-5 and GM-CSF. RESULTS: The PBE count was increased ($P < 0.05$) in both asthmatic groups, independent of treatment, as compared to healthy children. The IL-5R expression on PBE, as well as the in vitro responsiveness of PBE to recombinant IL-5, was reduced ($P < 0.05$), in budesonide-treated asthmatic children compared to nonsteroid-treated asthmatic children and healthy children. The proportion of GM-CSFR positive PBE and in vitro responsiveness of PBE to recombinant GM-CSF were not different between the groups. In vitro treatment with budesonide did not down-regulate the proportion of IL-5R positive PBE. CONCLUSIONS: Budesonide-treatment of asthmatic children induces a selectively reduced IL-5R expression on PBE, concomitant with a reduced in vitro responsiveness of PBE to IL-5. We suggest that this budesonide-related down-regulation of the IL-5R might be a mechanism by which steroid treatment inhibits the action of IL-5 on eosinophil accumulation and activation in vivo.

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